Rule WLM019:   Multiple periods specified for subsystem transaction service class

Finding: Multiple periods have been specified for a subsystem transaction service class.

Impact: This finding has a LOW impact on the performance of your system. The impact mostly is a result of increased (and unnecessary) overhead.

Logic flow: This a basic finding. There are no predecessor rules.

Discussion: A service class may be broken into multiple service class **periods**. Each service class has Period 1 automatically defined. Optionally, installations can define up to seven additional service class periods (although typically no more than two or three additional service class periods are defined). Each service class period can have its own performance goals, defined to the Workload Manager via the Workload Manager ISPF panels.

An address space (TSO transaction, batch job step, etc.) begins in Period 1 of the service class to which it is assigned. The address space transitions from Period 1 to Period 2 (and to subsequent periods), based upon the accumulation of "service" by the transaction. The "service" required by the address space is a combination of CPU resources, I/O resources, and memory resources.

The normal purpose of defining multiple service class periods is to give higher priority to interactive transactions, short batch job steps, etc. Overall response is decreased (and overall throughput is increased) when address spaces requiring relatively few resources are processed at a higher priority than those address spaces requiring substantial resources[1].

If subsystems are installed which support Workload Manager reporting (e.g., CICS/ESA Version 4.1 or IMS/ESA Version 5), installations can define service classes which describe particular transaction types and specify performance goals for the transactions in the service class. All transactions entering the system which fall into the workload category described by the service class are associated with the service class.

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[1]Note that with MVS/ESA SP5.1, the redesign of the MVS Dispatcher algorithms eliminated much of the potential conflict for CPU cycles (although other considerations apply). Please refer to Rule WLM025 for additional discussion in this area.

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Please refer to Section 4 for discussion of the relationship between server service classes and transaction service classes.

Of particular importance to this finding is the fact that the System Resources Manager (SRM) **does not accumulate resources** for subsystem transaction service classes. These transaction service classes are simply logical groupings of transactions based on the workload classification scheme, and the actual resources are used by (and attributed to) the address spaces processing the transactions.

For example, CICS transactions may be grouped into a transaction service class. CICS/ESA Version 4 reports information about the transactions to the Workload Manager (transaction response time and transaction delays). The CICS region is the address space which executes CICS tasks to process the CICS transactions, and the region address space uses resources.

Since an address space transitions from Period 1 to Period 2 (and to subsequent periods) based upon the accumulation of "service" by the transaction, and since the transactions are not address spaces, the transactions cannot transition from Period 1 to Period 2. Consequently, any period other than Period 1 is simply unused. However, the system will incur additional overhead caused by the unused service class period(s). As examples of the overhead:

• Additional SRM control blocks are created and processed.

• Additional Workload Manager control blocks are created and processed.

• RMF requires additional processing of the control blocks.

• SMF Type 72(Subtype 3) records are written for each service class period defined (regardless of whether the service class periods are used by the Workload Manager).

CPExpert produces Rule WLM019 when it detects that multiple periods are defined for a service class describing subsystem transactions (e.g., CICS or IMS transactions).

The following example illustrates the output from Rule WLM019:

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RULE WLM019:  MULTIPLE PERIODS WERE SPECIFIED FOR SUBSYSTEM TRANSACTIONS

   CPExpert noticed that the CICSDEFA Service Class was defined to include
   multiple periods.  The CICSDEFA Service Class consists of subsystem
   transactions (e.g., CICS or IMS transactions), and multiple periods
   cannot be used for subsystem transactions.  CPExpert suggests that you
   eliminate the multiple-period definition, since the unused periods will
   generate unnecessary overhead.
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Suggestion: CPExpert suggests that you eliminate the multiple periods for the transaction service class. These periods are not used, but they cause added overhead.

Reference: MVS Planning: Workload Management
MVS/ESA(SP 5):   Chapter 8.2: Using Performance Periods
OS/390 (V1R1):   Chapter 8.2: Using Performance Periods
OS/390 (V1R2):   Chapter 8.2: Using Performance Periods
OS/390 (V1R3):   Chapter 8.2: Using Performance Periods
OS/390 (V2R4):   Chapter 8.3: Using Performance Periods
OS/390 (V2R5):   Chapter 8.3: Using Performance Periods
OS/390 (V2R6):   Chapter 8.3: Using Performance Periods
OS/390 (V2R7):   Chapter 8.3: Using Performance Periods
OS/390 (V2R8):   Chapter 8.3: Using Performance Periods
OS/390 (V2R9):   Chapter 8.3: Using Performance Periods
OS/390 (V2R10):   Chapter 8.3: Using Performance Periods
z/OS (V1R1):   Chapter 8.3: Using Performance Periods
z/OS (V1R2):   Chapter 8.3: Using Performance Periods
z/OS (V1R3):   Chapter 8.3: Using Performance Periods
z/OS (V1R4):   Chapter 8.3: Using Performance Periods |